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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/985,741	11/06/2001	Hiroshi Koide	215810US3	4234

22850 7590 04/01/2003

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EXAMINER

PHAM, HAI CHI

ART UNIT PAPER NUMBER

2861

DATE MAILED: 04/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/985,741

Applicant(s)

KOIDE, HIROSHI

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other:

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference signs not mentioned in the description:

- "2" (driven roller) as shown in Fig. 1;
- "26" (lever) as shown in Fig. 9.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 5, 9, and 35 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form.

Claim 5:

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- Dependent claim 5/4/3/2/1 inherits all the limitations recited in each of the parent claims 1 through 4. Therefore, the limitation recited in claim 5 is redundant since it is a clear repetition of the limitation recited in claim 3.

Claim 9:

- Dependent claim 9/8/7/6/2/1 inherits all the limitations recited in each of the parent claims, namely claims 1, 2, 6-8. Therefore, the limitation recited in claim 9 is redundant since it is a clear repetition of the limitation recited in claim 7.

Claim 35:

- Dependent claim 35/34/33/17 inherits all the limitations recited in each of the parent claims, namely claims 17, 33-34. Therefore, the limitation recited in claim 35 is redundant since it is a clear repetition of the limitation recited in claim 33.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 17-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17:

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- Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. Claim 17 is directed to an “image forming apparatus”, but only claims the endless belt and its driving mechanism, and fails to recite the essential elements for the formation of the image, e.g., printhead, ...

Claim 34:

- The following limitation “said mark functions as a mark for sensing a start signal output for each rotation at the same time” appears to be unclear in that it is not known where the mark is located with respect to the other elements of the image forming apparatus and how it would be detected or “sensed” to produce a start signal. Moreover, it is not known which claimed element would generate the “start signal output” and which “rotation” is being claimed or being related to any of the other components of the image forming apparatus, e.g., drum, drive roller. “said mark” also lacks antecedent basis.

Claim 37:

- Similarly, the following limitation “said mark functions as a mark for sensing a start signal output for each rotation at the same time” appears to be unclear in that it is not known where the mark is located with respect to the other elements of the image forming apparatus and how it would be detected or “sensed” to produce a start signal. Moreover, it is not known which claimed element would generate the “start signal output” and which “rotation” is being

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claimed or being related to any of the other components of the image forming apparatus, e.g., drum, drive roller. "said mark" also lacks antecedent basis.

Claim 39:

- Similarly, the following limitation "said mark functions as a mark for sensing a start signal output for each rotation at the same time" appears to be unclear in that it is not known where the mark is located with respect to the other elements of the image forming apparatus and how it would be detected or "sensed" to produce a start signal. Moreover, it is not known which claimed element would generate the "start signal output" and which "rotation" is being claimed or being related to any of the other components of the image forming apparatus, e.g., drum, drive roller. "said mark" also lacks antecedent basis.

Claims 18-36, 38, 40 are dependent from claims 17, 34, 37, 39 above, and are therefore indefinite.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 15-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawano et al. (U.S. 6,463,247).

Kawano et al. discloses a color image formation apparatus comprising belt driving means (drive roller 20) positioned at one end of the belt (intermediate transfer belt 6) for moving said belt, a driven roller (22) positioned at the other end of the belt remote from said belt driving means, a plurality of rotary bodies (photosensitive drums 5) arranged side by side in a direction of movement of the belt and pressed against said belt either directly or indirectly to be thereby rotated by said belt, and at least one tension roller (roller 21 connected to the tension member 32, Fig. 4) positioned between said plurality of rotary bodies, between said belt driving means and said plurality of rotary bodies or between said driven roller and said plurality of rotary bodies. With respect to claim 16, Kawano et al. further teaches a plurality of rollers (21) disposed at both sides of the photosensitive drums (5) (see Fig. 5).

8. Alternatively, claim 16 is rejected under 35 U.S.C. 102(b) as being anticipated by Aerens et al. (U.S. 5,828,937).

Aerens et al. discloses a multiple station printer including belt driving means positioned at one end of the belt for moving said belt and comprising a drive roller (drive roller 22), at least one rotary body (drums 24) arranged side by side in a direction of movement of the belt and pressed against said belt either directly or indirectly to be thereby rotated by said belt, and tension rollers (guide rollers 36 whose positions determine the wrapping angle of the drums) positioned at both sides of a position where the belt contacts said rotary body (Fig. 2).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Bannai (U.S. 5,315,322).

Kawano et al. discloses all the basic limitations of the claimed invention except for the reduced eccentricity to not affect a variation of the speed of the belt, the molded shaft and drive roller, the eccentricity adjusting mechanism.

Bannai discloses an image forming apparatus comprising a belt driving means (belt drive roller 2) for moving said belt (1), the drive roller having a motor (36) and an encoder (38) mounted on the integrated shaft of the drive roller (Fig. 2) such that the

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eccentricity of the drive roller is reduced to suppress the speed fluctuation (col. 9, lines 4-35).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the drive roller eccentric reduction as taught by Bannai in the device of Kawano et al. The motivation for doing so would have been to restrain the fluctuation of the speed of the belt to prevent the misregistration of the color image.

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Nishii (JP 7-210839).

Kawano et al. discloses all the basic limitations of the claimed invention except for the outer rotor coreless motor.

Nishii discloses a rotary drum device (20) with built-in coreless motor (30) such that the manufacturing of the whole rotary drum device is simplified.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate a coreless motor as taught by Nishii in the device of Kawano et al. for the purpose of providing a simplified and integrated rotary drum device.

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Nishii, as applied to claim 17 above, and further in view of McLaughlin et al. (U.S. 5,998,952).

Kawano et al., as modified by Nishii, discloses all the basic limitations of the claimed invention except for the torque ripple spatial frequency range.

McLaughlin et al. discloses a method and apparatus for reducing the torque ripple in an electric motor by choosing a spatial frequency below which all torque ripple is removed (col. 12, line 62 to col. 13, line 7).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Kawano et al. with the aforementioned teaching of McLaughlin et al. for the purpose of the removing the torque ripple of the motor.

13. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Nishii in view of Bannai.

Kawano et al. in view of Nishii discloses all the basic limitations of the claimed invention except for the mark [of an encoder] being used for sensing a start signal output for each rotation.

Bannai discloses an image forming apparatus comprising a motor-driven drive roller (2) for moving an endless belt (1), the drive roller including a rotary encoder disc (37) having marks for sensing a forward start signal (S1) to drive the motor (39) forward.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate an encoder disc as taught by Bannai in the device of Kawano et al., as modified by Nishii. The motivation for doing so would have been to control the synchronization of the motor-driven drive roller and the start of the formation of the image.

Allowable Subject Matter

14. Claims 19-38, 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. Claims 19-38, 40 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter: the primary reason for the indication of the allowability of the claimed invention, with respect to claims 19-21, and 30-32, is the inclusion of the limitation, in the combination as currently claimed, that the drive roller is driven by an outer rotor coreless motor, which outer rotor serves as the drive roller for driving the endless belt of the image forming apparatus. The limitation is not found taught or fairly suggested by the prior arts made of record, considered alone or in combination.

The primary reason for the indication of the allowability of the claimed invention, with respect to claims 22-24, 33-35, 40, is the inclusion of the limitation, in the combination as currently claimed, that the drive roller is driven by an outer rotor coreless motor, the outer rotor being formed integrally with the drive roller for driving the endless belt of the image forming apparatus. The limitation is not found taught or fairly suggested by the prior arts made of record, considered alone or in combination.

The primary reason for the indication of the allowability of the claimed invention, with respect to claims 25-27, 36-38, is the inclusion of the limitation, in the combination

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as currently claimed, that the drive roller is driven by an outer rotor coreless motor, wherein the outer rotor coreless motor is driven such that timings for feeding currents to coils of different phases do not overlap each other when a flux density of a bore magnetic field is constant. The limitation is not found taught or fairly suggested by the prior arts made of record, considered alone or in combination.

The primary reason for the indication of the allowability of the claimed invention, with respect to claims 28-29, is the inclusion of the limitation, in the combination as currently claimed, that the drive roller is driven by an outer rotor coreless motor, wherein the outer rotor comprises an encoder disk on which at least one of timing marks for sensing a signal for rotation control and a mark for sensing a signal that switches a phase of a current to be fed to each of different coil phases. The limitation is not found taught or fairly suggested by the prior arts made of record, considered alone or in combination.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER

March 26, 2003